

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions and listings of claims in the application:

Listing of claims:

1. (canceled).

2. (previously presented) A composition comprising an apo-carbonic anhydrase protein and a photoluminescent molecule selected from the group consisting of 4-aminosulfonyl[1-(4-N-(5-fluoresceinylthioureido))butyl]benzamide, 4-(2-hydroxyethylthio)-7-aminosulfonyl-2,1,3-benzoxadiazole, hydroxynaphthalenesulphonamide, 2-(3-methoxy-4-ethoxyphenyl)-4-chloroquinoline-6-sulfonamide, N-(1-anthracenyl)-4-sulfonamido-benzenesulfonamide, ethyl-2-(4-sulfonamidophenyl)-4-hydroxyquinoline-6-carboxylate and N-(N'-(4'-sulfamoylglutaranily-amidoethyl))-4-amino-3,6-disulfo-1,8-naphthalimide.

3-4. (canceled).

5. (original) The composition of claim 2, wherein the apo-carbonic anhydrase protein is a human apo-carbonic anhydrase.

6-7. (canceled).

8. (withdrawn, currently amended) The composition of claim 5, wherein the photoluminescent molecule is conjugated to the apo-carbonic anhydrase through ~~the~~ a cysteine replacement amino acid.

9-12. (canceled).

13. (previously presented) The composition of claim 2, wherein the photoluminescent molecule is 4-(2-hydroxyethylthio)-7-aminosulfonyl-2,1,3-benzoxadiazole,.

14-22. (canceled).

23. (previously presented) A kit for assay of divalent metal ion concentration in a sample comprising:

- i) an apo-carbonic anhydrase protein;
- ii) a photoluminescent molecule selected from the group consisting of 4-aminosulfonyl[1-(4-N-(5-fluoresceinylthioureido))butyl]benzamide, 4-(2-hydroxyethylthio)-7-aminosulfonyl-2,1,3-benzoxadiazole, hydroxynaphthalenesulphonamide, 2-(3-methoxy-4-ethoxyphenyl)-4-chloroquinoline-6-sulfonamide, N-(1-anthracenyl)-4-sulfonamido-benzenesulfonamide,

ethyl-2-(4-sulfonamidophenyl)-4-hydroxyquinoline-6-carboxylate and N-(N'-(4'-sulfamoylglutaranily-amidoethyl))-4-amino-3,6-disulfo-1,8-naphthalimide said items i) and ii) being packaged in a container that prevents unwanted contamination by divalent metal ions.

24. (canceled).

25. (previously presented) The kit of claim 23, further comprising iii) a standard solution of a divalent metal ion that is packaged in a container that prevents unwanted contamination by divalent metal ions.

26. (previously presented) The kit of claim 23, further comprising iii) a buffer for maintaining the concentration of a free divalent metal ion in a solution that is packaged in a container that prevents unwanted contamination by divalent metal ions.

27. (previously presented) The kit of claim 23, wherein the buffer for maintaining a concentration of free divalent metal ion is nitrilotriacetic acid.

28. **(previously presented)** The kit of claim 23, further comprising iii) a chelating resin for preventing or removing unwanted divalent metal ion contamination that is packaged in a container that prevents unwanted contamination by divalent metal ions.

29. **(previously presented)** The kit of claim 25, further comprising iv) a buffer for maintaining the concentration of a free divalent metal ion in a solution that is packaged in a container that prevents unwanted contamination by divalent metal ions.

30. **(previously presented)** The kit of claim 29, wherein the buffer for maintaining a concentration of free divalent metal ion is nitrilotriacetic acid.

31. **(previously presented)** The kit of claim 25, further comprising iv) a chelating resin for preventing or removing unwanted divalent metal ion contamination that is packaged in a container that prevents unwanted contamination by divalent metal ions.

32. **(previously presented)** The kit of claim 31, further comprising v) a buffer for maintaining the concentration of a

free divalent metal ion in a solution that is packaged in a container that prevents unwanted contamination by divalent metal ions.

33. (previously presented) The kit of claim 32, wherein the buffer for maintaining a concentration of free divalent metal ion is nitrilotriacetic acid.